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<110> Wang, Yi  
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<120> Chimeric Proteins for Diagnosis and Treatment of Diabetes

<130> 109488-135

<140> US 09/528,225

<141> 2000-03-21

<150> PCT/US98/27408

<151> 1998-12-23

<150> US 60/068,648

<151> 1997-12-23

<160> 37

<170> PatentIn version 3.1

<210> 1

<211> 160

<212> PRT

<213> Artificial Sequence

<220>

<223> IG1 Infusion Protein

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1 5 10 15

Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg  
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Arg Glu Ala Glu Asp Leu Asn Met Tyr Ala Met Met Ile Ala Arg Phe  
35 40 45

Lys Met Phe Pro Glu Val Lys Glu Lys Gly Met Ala Ala Leu Pro Arg  
50 55 60

Leu Ile Ala Phe Thr Ser Glu Lys Cys Leu Glu Leu Ala Glu Tyr Leu  
65 70 75 80

Tyr Asn Ile Ile Lys Asn Arg Glu Gly Tyr Glu Met Val Phe Asp Gly  
85 90 95

Lys Pro Gln His Thr Asn Val Cys Phe Trp Tyr Ile Pro Pro Ser Leu  
100 105 110

Arg Thr Leu Glu Asp Asn Glu Glu Arg Met Ser Arg Leu Ser Lys Val  
115 120 125

Ala Pro Val Ile Lys Ala Arg Met Met Glu Tyr Gly Thr Thr Met Val  
130 135 140

Ser Tyr Gln Pro Leu Gly Asp Lys Val Asn His His His His His His  
145 150 155 160

<210> 2  
<211> 180  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> IG2 Fusion Protein

<400> 2

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Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg  
20 25 30

Arg Glu Ala Glu Asp Leu Met Asn Ile Leu Leu Gln Tyr Val Val Lys  
35 40 45

Ser Phe Asp Asn Met Tyr Ala Met Met Ile Ala Arg Phe Lys Met Phe  
50 55 60

Pro Glu Val Lys Glu Lys Gly Met Ala Ala Leu Pro Arg Leu Ile Ala  
65 70 75 80

Phe Thr Ser Glu His Ser His Phe Ser Leu Lys Lys Cys Leu Glu Leu  
85 90 95

A1  
cont.

Ala Glu Tyr Leu Tyr Asn Ile Ile Lys Asn Arg Glu Gly Tyr Glu Met  
 100 105 110

Val Phe Asp Gly Lys Pro Gln His Thr Asn Val Cys Phe Trp Tyr Ile  
 115 120 125

Pro Pro Ser Leu Arg Thr Leu Glu Asp Asn Glu Glu Arg Met Ser Arg  
 130 135 140

Leu Ser Lys Val Ala Pro Val Ile Lys Ala Arg Met Met Glu Tyr Gly  
 145 150 155 160

Thr Thr Met Val Ser Tyr Gln Pro Leu Gly Asp Lys Val Asn His His  
 165 170 175

His His His His  
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<210> 3  
 <211> 144  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> IG3 Fusion Protein

<400> 3

Met Phe Val Asn Gln His Leu Cys Gly Ser His Leu Val Glu Ala Leu  
 1 5 10 15

Trp Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg  
 20 25 30

Arg Glu Ala Glu Asp Leu Met Asn Ile Leu Leu Gln Tyr Val Val Lys  
 35 40 45

Ser Phe Asp Asn Met Tyr Ala Met Met Ile Ala Arg Phe Lys Met Phe  
 50 55 60

Pro Glu Val Lys Glu Lys Gly Met Ala Ala Leu Pro Arg Leu Ile Ala  
 65 70 75 80

Phe Thr Ser Glu His Ser His Phe Ser Leu Lys Lys Cys Leu Glu Leu  
                     85                    90                    95

Ala Glu Tyr Leu Tyr Asn Ile Ile Lys Asn Arg Glu Gly Tyr Glu Met  
                     100                    105                    110

Val Phe Asp Gly Lys Pro Gln His Thr Asn Val Cys Phe Trp Tyr Ile  
                     115                    120                    125

Pro Pro Ser Leu Arg Thr Leu Glu Asp Asn His His His His His  
                     130                    135                    140

<210> 4

<211> 181

<212> PRT

<213> Artificial Sequence

<220>

<223> IG4 Fusion Protein

<400> 4

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Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg  
                     20                    25                    30

Arg Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly  
                     35                    40                    45

Pro Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln  
                     50                    55                    60

Lys Arg Gly Thr Asn Met Phe Thr Tyr Glu Ile Ala Pro Val Phe Val  
   65                    70                    75                    80

Leu Leu Glu Tyr Val Thr Leu Lys Lys Met Arg Glu Ile Ile Gly Trp  
                     85                    90                    95

Pro Gly Gly Ser Gly Asp Gly Gly Gly Met Asn Ile Leu Leu Gln Tyr  
                     100                    105                    110

Val Val Lys Ser Phe Asp Asn Met Tyr Ala Met Met Ile Ala Arg Phe  
 115 120 125

Lys Met Phe Pro Glu Val Lys Glu Lys Gly Met Ala Ala Leu Pro Arg  
 130 135 140

Leu Gly Gly Gly Ile Ala Phe Thr Ser Glu His Ser His Phe Ser Leu  
 145 150 155 160

Lys Lys Gly Ala Ala Ala Leu Gly Ile Gly Thr Asp Ser Val Ile His  
 165 170 175

His His His His His  
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<210> 5  
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 <212> PRT  
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 <223> IG5 Fusion Protein

<400> 5

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 1 5 10 15

Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg  
 20 25 30

Arg Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly  
 35 40 45

Pro Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln  
 50 55 60

Lys Arg Gly Thr Asn Met Phe Thr Tyr Glu Ile Ala Pro Val Phe Val  
 65 70 75 80

Leu Leu Glu Tyr Val Thr Leu Lys Lys Met Arg Glu Ile Ile Gly Trp  
 85 90 95

Pro Gly Gly Ser Gly Asp Gly Gly Gly Met Asn Ile Leu Leu Gln Tyr  
                   100                  105                  110

Val Val Lys Ser Phe Asp Asn Met Tyr Ala Met Met Ile Ala Arg Phe  
           115                  120                  125

Lys Met Phe Pro Glu Val Lys Glu Lys Gly Met Ala Ala Leu Pro Arg  
       130                  135                  140

Leu Gly Gly Gly Ile Ala Phe Thr Ser Glu His Ser His Phe Ser Leu  
   145                  150                  155                  160

Lys Lys Gly Ala Ala Ala Leu Gly Ile Gly Thr Asp Ser Val Ile Gly  
                   165                  170                  175

Gly Gly Tyr Ile Pro Pro Ser Leu Arg Thr Leu Glu Asp Asn Glu Glu  
           180                  185                  190

Arg Met Ser Arg Leu Ser Lys Val Ala Pro Val Ile Lys Ala Arg Met  
       195                  200                  205

Met Glu Tyr Gly Thr Thr Met Val Ser Tyr Gln Pro Leu Gly Asp Lys  
       210                  215                  220

Val Asn His His His His His His  
   225                  230

<210> 6  
 <211> 393  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> IG6 Fusion Protein

<400> 6

Met Phe Val Asn Gln His Leu Cys Gly Ser His Leu Val Glu Ala Leu  
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Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg  
           20                  25                  30

Arg Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly  
 35 40 45

Pro Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln  
 50 55 60

Lys Arg Gly Thr Asn Met Phe Thr Tyr Glu Ile Ala Pro Val Phe Val  
 65 70 75 80

Leu Leu Glu Tyr Val Thr Leu Lys Lys Met Arg Glu Ile Ile Gly Trp  
 85 90 95

Pro Gly Gly Ser Gly Asp Gly Gly Gly Met Asn Ile Leu Leu Gln Tyr  
 100 105 110

Val Val Lys Ser Phe Asp Asn Met Tyr Ala Met Met Ile Ala Arg Phe  
 115 120 125

Lys Met Phe Pro Glu Val Lys Glu Lys Gly Met Ala Ala Leu Pro Arg  
 130 135 140

Leu Gly Gly Gly Ile Ala Phe Thr Ser Glu His Ser His Phe Ser Leu  
 145 150 155 160

Lys Lys Gly Ala Ala Ala Leu Gly Ile Gly Thr Asp Ser Val Ile Gly  
 165 170 175

Gly Gly Ile Glu His Asp Pro Arg Met Pro Ala Tyr Ile Ala Thr Gln  
 180 185 190

Gly Pro Leu Ser His Thr Ile Ala Asp Phe Trp Gln Met Val Trp Glu  
 195 200 205

Ser Gly Cys Thr Val Ile Val Met Leu Thr Pro Leu Val Glu Asp Gly  
 210 215 220

Val Lys Gln Cys Asp Arg Tyr Trp Pro Asp Glu Gly Ala Ser Leu Tyr  
 225 230 235 240

His Val Tyr Glu Val Asn Leu Val Ser Glu His Ile Trp Cys Glu Asp  
 245 250 255

Phe Leu Val Arg Ser Phe Tyr Leu Lys Asn Val Gln Thr Gln Glu Thr

260

265

270

Arg Thr Leu Thr Gln Phe His Phe Leu Ser Trp Pro Ala Glu Gly Thr  
 275 280 285

Pro Ala Ser Thr Arg Pro Leu Leu Asp Phe Arg Arg Lys Val Asn Lys  
 290 295 300

Cys Tyr Arg Gly Arg Ser Cys Pro Ile Ile Val His Cys Ser Asp Gly  
 305 310 315 320

Ala Gly Arg Thr Gly Thr Tyr Ile Leu Ile Asp Met Val Leu Asn Arg  
 325 330 335

Met Ala Lys Gly Val Lys Glu Ile Asp Ile Ala Ala Thr Leu Glu His  
 340 345 350

Val Arg Asp Gln Arg Pro Gly Leu Val Arg Ser Lys Asp Gln Phe Glu  
 355 360 365

Phe Ala Leu Thr Ala Val Ala Glu Glu Val Asn Ala Ile Leu Lys Ala  
 370 375 380

Leu Pro Gln His His His His His His  
 385 390

&lt;210&gt; 7

&lt;211&gt; 444

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; IG7 Fusion Protein

&lt;400&gt; 7

Met Phe Val Asn Gln His Leu Cys Gly Ser His Leu Val Glu Ala Leu  
 1 5 10 15

Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg  
 20 25 30

Arg Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly



35	40	45
Pro Gly Ala Gly Ser Leu Gln	Pro Leu Ala Leu Glu Gly Ser Leu Gln	
50	55	60
Lys Arg Gly Thr Asn Met Phe Thr Tyr Glu Ile Ala Pro Val Phe Val		
65	70	75
Leu Leu Glu Tyr Val Thr Leu Lys Lys Met Arg Glu Ile Ile Gly Trp		
85	90	95
Pro Gly Gly Ser Gly Asp Gly Gly Gly Met Asn Ile Leu Leu Gln Tyr		
100	105	110
Val Val Lys Ser Phe Asp Asn Met Tyr Ala Met Met Ile Ala Arg Phe		
115	120	125
Lys Met Phe Pro Glu Val Lys Glu Lys Gly Met Ala Ala Leu Pro Arg		
130	135	140
Leu Gly Gly Gly Ile Ala Phe Thr Ser Glu His Ser His Phe Ser Leu		
145	150	155
Lys Lys Gly Ala Ala Ala Leu Gly Ile Gly Thr Asp Ser Val Ile Gly		
165	170	175
Gly Gly Tyr Ile Pro Pro Ser Leu Arg Thr Leu Glu Asp Asn Glu Glu		
180	185	190
Arg Met Ser Arg Leu Ser Lys Val Ala Pro Val Ile Lys Ala Arg Met		
195	200	205
Met Glu Tyr Gly Thr Thr Met Val Ser Tyr Gln Pro Leu Gly Asp Lys		
210	215	220
Val Asn Gly Gly Gly Ile Glu His Asp Pro Arg Met Pro Ala Tyr Ile		
225	230	235
Ala Thr Gln Gly Pro Leu Ser His Thr Ile Ala Asp Phe Trp Gln Met		
245	250	255
Val Trp Glu Ser Gly Cys Thr Val Ile Val Met Leu Thr Pro Leu Val		
260	265	270

Glu Asp Gly Val Lys Gln Cys Asp Arg Tyr Trp Pro Asp Glu Gly Ala  
 275 280 285

Ser Leu Tyr His Val Tyr Glu Val Asn Leu Val Ser Glu His Ile Trp  
 290 295 300

Cys Glu Asp Phe Leu Val Arg Ser Phe Tyr Leu Lys Asn Val Gln Thr  
 305 310 315 320

Gln Glu Thr Arg Thr Leu Thr Gln Phe His Phe Leu Ser Trp Pro Ala  
 325 330 335

Glu Gly Thr Pro Ala Ser Thr Arg Pro Leu Leu Asp Phe Arg Arg Lys  
 340 345 350

Val Asn Lys Cys Tyr Arg Gly Arg Ser Cys Pro Ile Ile Val His Cys  
 355 360 365

Ser Asp Gly Ala Gly Arg Thr Gly Thr Tyr Ile Leu Ile Asp Met Val  
 370 375 380

Leu Asn Arg Met Ala Lys Gly Val Lys Glu Ile Asp Ile Ala Ala Thr  
 385 390 395 400

Leu Glu His Val Arg Asp Gln Arg Pro Gly Leu Val Arg Ser Lys Asp  
 405 410 415

Gln Phe Glu Phe Ala Leu Thr Ala Val Ala Glu Glu Val Asn Ala Ile  
 420 425 430

Leu Lys Ala Leu Pro Gln His His His His His  
 435 440

<210> 8  
 <211> 173  
 <212> PRT  
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<220>  
 <223> IG4NHB hypothetical fusion protein

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Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg  
 20 25 30

Arg Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly  
 35 40 45

Pro Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln  
 50 55 60

Lys Arg Gly Met Asn Ile Leu Leu Gln Tyr Val Val Lys Ser Phe Asp  
 65 70 75 80

Asn Met Tyr Ala Met Met Ile Ala Arg Phe Lys Met Phe Pro Glu Val  
 85 90 95

Lys Glu Lys Gly Met Ala Ala Leu Pro Arg Leu Ile Ala Phe Thr Ser  
 100 105 110

Glu His Ser His Phe Ser Leu Lys Lys Cys Leu Glu Leu Ala Glu Tyr  
 115 120 125

Leu Tyr Asn Ile Ile Lys Asn Arg Glu Gly Tyr Glu Met Val Phe Asp  
 130 135 140

Gly Lys Pro Gln His Thr Asn Val Cys Phe Trp Tyr Ile Pro Pro Ser  
 145 150 155 160

Leu Arg Thr Leu Glu Asp Asn His His His His His His  
 165 170

&lt;210&gt; 9

&lt;211&gt; 3

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Helix breaker

&lt;400&gt; 9

Pro Pro Pro  
1<210> 10  
<211> 3  
<212> PRT  
<213> Artificial Sequence<220>  
<223> Helix breaker

&lt;400&gt; 10

Gly Gly Gly  
1<210> 11  
<211> 139  
<212> DNA  
<213> Artificial Sequence<220>  
<223> prIG1 primer

<400> 11	
catatgttcg ttaaccagca tctgtgtggc tctcacctgg ttgaagccct gtatctggtt	60
tgcggtgaac gcggcttttt ctacaccccg aaaaccgctc gtgaagcgga agatctgaac	120
atgtatgcca tgatgatcg	139

<210> 12  
<211> 143  
<212> DNA  
<213> Artificial Sequence<220>  
<223> prIG2 primer

<400> 12	
ggtttttaat gatgttgtac agatattccg ccagttccag acatttttca gaggttaaagg	60
caatcagacg cggcagcgcg gccatacctt tttctttaac ttccgggaac atttttaaagc	120

gcgcgatcat catggcatac atg

143

<210> 13  
 <211> 138  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> prIG3 prmer

<400> 13  
 gtacaacatc attaaaaacc gcgaaggcta tgaaatgggt ttcgatggta aaccgcagca 60  
 taccaacgtt tgcttttggg acatcccgcc gagcctgcgt accctggaag ataacgaaga 120  
 acgcatgagc cgtctgtc 138

<210> 14  
 <211> 132  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> prIG4 primer

<400> 14  
 ggatccttaa tggatgatgt gatgggtggt aactttatca cccagcggct ggtagctaac 60  
 catgggtggtg ccatattcca tcatgcgcgc ttaataaacc ggggcaactt tagacagacg 120  
 gctcatgcgt tc 132

<210> 15  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> prIG5 primer

<400> 15  
 catatgttcg ttaaccag

18

<210> 16  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG6 primer

<400> 16  
 ggatccttaa tggatgatg 18

<210> 17  
 <211> 492  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> IG1 Fusion Protein coding sequence

<400> 17  
 catatgttcg ttaaccagca tctgtgtggc tctcacctgg ttgaagccct gtatctggtt 60  
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 atgtatgcca tgatgatcgc gcgctttaa atgttcccg aagttaaaga aaaaggatg 180  
 gccgcgctgc cgcgtctgat tgcctttacc tctgaaaaat gtctggaact ggcggaatat 240  
 ctgtacaaca tcattaataa ccgcgaaggc tatgaaatgg ttttcgatgg taaaccgcag 300  
 cataccaacg tttgcttttg gtacatcccg ccgagcctgc gtaccctgga agataacgaa 360  
 gaacgcatga gccgtctgtc taaagttgcc ccggttatta aagcgcgcat gatggaatat 420  
 ggcaccacca tggtagcta ccagccgctg ggtgataaag ttaaccacca tcaccatcac 480  
 cattaaggat cc 492

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 <211> 64  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG7 primer

<400> 18  
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 gatg 64

<210> 19  
 <211> 78  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG8 primer

<400> 19  
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 taaaggcaat cagacgcg 78

<210> 20  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG12 primer

<400> 20 27  
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<210> 21  
 <211> 552  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> IG2 Fusion Protein coding sequence

<400> 21 60  
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 aacattctgc tgcagtatgt tgttaaaagc ttcgataaca tgtatgccat gatgatcgcg 180  
 cgctttaaaa tgttcccga agttaagaa aaaggatatgg ccgcgctgcc gcgtctgatt 240

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gcctttacct ctgaacatag ccatttttct ctgaaaaaat gtctggaact ggcggaatat 300
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cataccaacg tttgcttttg gtacatcccg ccgagcctgc gtaccctgga agataacgaa 420
gaacgcata gaacgtctgtc taaagttgcc ccggttatta aagcgcgcat gatggaatat 480
ggcaccacca tggttagcta ccagccgctg ggtgataaag ttaaccacca tcaccatcac 540
cattaaggat cc 552

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<210> 22  
 <211> 46  
 <212> DNA  
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<220>  
 <223> prIG13 primer

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<400> 22
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<210> 23  
 <211> 444  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> IG3 Fusion Protein coding sequence

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tgcggtgaac gcggcttttt ctacaccccg aaaaccgctc gtgaagcgga agatctgatg 120
aacattctgc tgcagtatgt tgttaaaagc ttcgataaca tgtatgccat gatgatcgcg 180
cgcttttaaaa tggtcccgga agttaaaaga aaaggtatgg ccgcgctgcc gcgtctgatt 240
gcctttacct ctgaacatag ccatttttct ctgaaaaaat gtctggaact ggcggaatat 300
ctgtacaaca tcattaaaaa ccgcgaaggc tatgaaatgg ttttcgatgg taaaccgcag 360
cataccaacg tttgcttttg gtacatcccg ccgagcctgc gtaccctgga agataaccac 420
catcaccatc accattaagg atcc 444

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<210> 24  
 <211> 555  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> IG4 Fusion Protein coding sequence

<400> 24  
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 gtggggcagg tggagctggg cgggggccct ggtgcaggca gcctgcagcc cttggccctg 180  
 gaggggtccc tgcagaagcg tggcactaac atgttcacct atgaaattgc tccagtattt 240  
 gtgcttttgg aatatgtcac actaaagaaa atgagagaaa tcattggctg gccagggggc 300  
 tctggcgatg gaggcggtat gaacattctg ctgcagtatg ttgttaaag cttcgataac 360  
 atgtatgcca tgatgatcgc gcgctttaa atgttcccgg aagttaaaga aaaaggtatg 420  
 gccgcgctgc cgcgtctggg aggcggtatt gcctttacct ctgaacatag ccatttttct 480  
 ctgaaaaaag gagctgcagc cttagggatt ggaacagaca gcgtgattca ccatcaccat 540  
 caccattaag gatcc 555

<210> 25  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG14 primer

<400> 25  
 catatgttcg ttaaccagca tctg 24

<210> 26  
 <211> 69  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG15 primer

<400> 26  
gctgcctgca ccagggcccc cgcccagctc cacctgcccc acctgcagat cttccgcttc 60  
acgacgggt 69

<210> 27  
<211> 66  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> prIG16 primer

<400> 27  
agtgccacgc ttctgcaggg acccctccag ggccaagggc tgcaggctgc ctgcaccagg 60  
gcccc 66

<210> 28  
<211> 69  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> prIG17 primer

<400> 28  
ttccaaaagc acaaatactg gagcaatttc ataggtgaac atgttagtgc cacgcttctg 60  
cagggaccc 69

<210> 29  
<211> 69  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> prIG18 primer

<400> 29  
ccctggccag ccaatgattt ctctcatttt ctttagtgtg acatattcca aaagcacaaa 60

tactggagc 69

<210> 30  
 <211> 69  
 <212> DNA  
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<220>  
 <223> prIG19 primer

<400> 30  
 agagaaatca ttggctggcc agggggctct ggcgatggag gcggtatgaa cattctgctg 60  
 cagtatgtt 69

<210> 31  
 <211> 68  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG20 primer

<400> 31  
 cagagaaaaa tggctatgtt cagaggtaaa ggcaataccg cctcccagac gcggcagcgc 60  
 ggccatac 68

<210> 32  
 <211> 69  
 <212> DNA  
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<220>  
 <223> prIG21 primer

<400> 32  
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 atgttcaga 69

<210> 33  
 <211> 60

<212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG22 primer

<400> 33  
 ttagggattg gaacagacag cgtgattgga ggcggttaca tcccgccgag cctgcgtacc 60

<210> 34  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> prIG23 primer

<400> 34  
 ggatccttaa tggatgatggt gatg 24

<210> 35  
 <211> 708  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> IG5 Fusion Protein coding sequence

<400> 35  
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 gtggggcagg tggagctggg cggggggcct ggtgcaggca gcctgcagcc cttggccctg 180  
 gaggggtccc tgcagaagcg tggcactaac atgttcacct atgaaattgc tccagtattt 240  
 gtgctttttg aatatgtcac actaaagaaa atgagagaaa tcattggctg gccagggggc 300  
 tctggcgatg gaggcggtat gaacattctg ctgcagtatg ttgttaaaag cttcgataac 360  
 atgtatgcca tgatgatcgc gcgctttaa atgttcccg aagttaaaga aaaaggatg 420  
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